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**DEC 26 2007**

Remarks:

Reconsideration of the application is respectfully requested.

Claims 1 - 29 are presently pending in the application. As it is believed that the claims were patentable over the cited art in their previously presented forms, the claims have not been amended, herein, to overcome the references.

Applicants gratefully acknowledge that item 14 of the above-identified Office Action indicated that claims 6, 7 and 26 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In item 4 of the above-identified Office Action, claims 1 - 5, 8, 11, 16, 19, 21, 22, 24 and 27 - 29 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U. S. Patent No. 5,701,346 to Herre et al ("**HERRE**").

In item 6 of the Office Action, claims 9, 12, 13 and 15 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of Stoll, "MPEG Audio Layer II: A Generic Coding Standard for Two and Multichannel Sound for DVB, DAB and Computer Multimedia", September 1995 ("**STOLL**"). In item 7 of the Office Action, claim 14 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of **STOLL**,

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

and further in view of U. S. Patent No. 6,442,517 to Miller et al ("**MILLER**"). In item 8 of the Office Action, claim 10 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of Theile et al., "MUSICAM-Surround: A Universal Multi-channel Coding system Compatible with ISO 11172-3", pp. 1-4, October 1992 ("**THEILE**"). In item 9 of the Office Action, claim 17 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of U. S. Patent Application Publication No. 2004/0181393 to Baumgarte ("**BAUMGARTE**"). In item 10 of the Office Action, claim 18 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of **BAUMGARTE**, and further in view of **MILLER**. In item 11 of the Office Action, claim 20 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of Herre et al., "Intensity Stereo Coding", 1994, Feb. 26 - Mar 01 ("**HERRE2**"). In item 12 of the Office Action, claim 23 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** in view of U. S. Patent No. 5,040,217 TO Brandenburg et al ("**BRANDENBURG**"). In item 13 of the Office Action, claim 25 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **HERRE** (Third Embodiment) in view of **HERRE** (First Embodiment).

Applicants respectfully traverse the above rejections.

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

More particularly, all of Applicants' independent claims have been rejected as allegedly being anticipated by **HERRE**.

However, Applicants' claims recite limitations that are neither taught, nor suggested, by the **HERRE** reference, nor by any of the other references cited in the Office Action (i.e., against Applicants' dependent claims).

For example, Applicants' claim 1 recites, among other limitations:

means for calculating channel side information for a selected original channel of the original signals, the means for calculating being operative to calculate the channel side information such that a downmix channel or a combined downmix channel including the first and the second downmix channel, when weighted using the channel side information, results in an approximation of the selected original channel; [emphasis added by Applicants]

Applicants' independent claims 21 and 28 recite, among other limitations:

calculating channel side information for a selected original channel of the original signals such that a downmix channel or a combined downmix channel including the first and the second downmix channel, when weighted using the channel side information, results in an approximation of the selected original channel; [emphasis added by Applicants]

Applicants' independent claim 22 recites, among other limitations:

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

Apparatus for inverse processing of input data, the input data including channel side information, a first downmix channel or a signal derived from the first downmix channel and a second downmix channel or a signal derived from the second downmix channel, wherein the first downmix channel and the second downmix channel are derived from at least three original channels of a multi-channel audio signal, and wherein the channel side information are calculated such that a downmix channel or a combined downmix channel including the first downmix channel and the second downmix channel, when weighted using the channel side information, results in an approximation of the selected original channel, [emphasis added by Applicants]

Similarly, Applicants' independent claim 27 recites, among other limitations:

Method of inverse processing of input data, the input data including channel side information, a first downmix channel or a signal derived from the first downmix channel and a second downmix channel or a signal derived from the second downmix channel, wherein the first downmix channel and the second downmix channel are derived from at least three original channels of a multi-channel audio signal, and wherein the channel side information are calculated such that a downmix channel or a combined downmix channel including the first downmix channel and the second downmix channel, when weighted using the channel side information, results in an approximation of the selected original channel, [emphasis added by Applicants]

Applicant's independent claim 29 recites similar limitations to those quoted above in connection with claim 27, among other limitations. As such, all of Applicants' claims require, among other limitations, calculating the channel side information such that a downmix channel or a combined downmix channel including the first downmix channel and the second

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

downmix channel, when weighted using the channel side information, results in an approximation of the selected original channel. However, the HERRE reference does not teach or suggest, among other limitations of Applicants' claims, weighting a downmix channel or a combined downmix channel including the first downmix channel and the second downmix channel using the channel side information, to approximate the selected original channel, as required by Applicants' claims. Rather, as will be shown in detail, herebelow, the multiplication in HERRE using  $1/k_l$  and  $1/k_r$  in Fig. 3C is only a neutralization of a corresponding multiplication by the inverse terms in Fig. 3A, but cannot be considered as a weighting of a downmix channel approximating a selected original channel. Instead, as will additionally be shown herebelow, the original surround channels of HERRE are reconstructed by A matrixing operation, as outlined in equation (3) in column 5 of HERRE, which does not include any transmitted channel side information, as required by Applicants' claims.

More particularly, page 3 of the Office Action analogizes  $L_c$  and  $R_c$  of Fig. 3A of HERRE to Applicants' claimed first downmix channel and a second downmix channel, respectively. Additionally, page 3 of the Office Action analogizes L, R, C,  $L_s$  and  $R_s$  of Fig. 3A of HERRE to the original channels from

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

which Applicants' claimed first and second downmix channels are derived. Further, page 3 of the Office Action points to Fig. 3A of **HERRE**, element 1 and element 4, "Joint Stereo Coder" and col. 2, lines 62 - 64 of **HERRE** as allegedly disclosing a means for calculating the channel side information of Applicants' claims.

However, contrary to Applicants' claimed invention, in **HERRE**, any joint stereo information from the stereo coder 1 of Fig. 3A of **HERRE** is not used for calculating  $L_c$  and  $R_c$  of Fig. 3A of **HERRE** (i.e. analogized in the Office Action to Applicants' two downmix channels). Instead, any joint stereo information from the joint stereo coder 1 of Fig. 3A of **HERRE** is only used in the joint stereo decoder 8 of Fig. 3C of **HERRE**, or in the joint stereo decoder 4 in Fig. 3A of **HERRE**, for weighting the joint stereo mono channel Y.

Thus, the output of the joint stereo coder 1 of Fig. 3A of **HERRE** cannot correspond to the "channel side information" of Applicants' claims (as is alleged in the Office Action), because the output of the joint stereo coder 1 of Fig. 3A of **HERRE** is never used to weight the the signals  $L_c$  and  $R_c$  of **HERRE** (i.e., analogized in the Office Action to Applicants' claimed first and second downmix channels). As such, among other limitations of Applicants' claims, **HERRE** fails to teach

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

or suggest, weighting a downmix channel or a combined downmix channel including the first downmix channel and the second downmix channel using the channel side information, to approximate the selected original channel. Rather, in HERRE, the joint stereo information of Fig. 3A is only used for processing with the mono joint stereo channel Y.

Page 3 of the Office Action additionally states, in part:

Further, the channel side information is a constant, which has been calculated from the original channels, which in this case is  $k_l$  and  $k_r$ . These constants are multiplied to the downmix channels to obtain the surround channels. [emphasis added by Applicants]

However,  $k_l$  and  $k_r$  of Fig. 3A of HERRE also do not correspond to the "channel side information" of Applicants' claims. More particularly, in HERRE, the downmix channels  $L_c$  and  $R_c$  output by the bitstream unpacker 6 in Fig. 3C of HERRE were previously multiplied by factors  $k_l$  or  $k_r$ , as can be clearly seen in Fig. 3A of HERRE. Then, on the decoder-side of HERRE, as illustrated in Fig. 3C, the output of the dequantizers 7C and 7B are multiplied by  $1/k_l$  and  $1/k_r$ . Thus, in HERRE, the channel, as output subsequent to these multiplications in Fig. 3C, is identical to the output of the compatibility matrix 5 of Fig. 3A of HERRE. Therefore, in HERRE, the only weighting applied to a downmix channel in the decoder of Fig. 3C of HERRE neutralizes the weighting performed in the encoder Fig.

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

3A, using the inverse value. In other words, in the decoder of Fig. 3C of **HERE**, the weighting of the dequantized channel  $L_c$  by its multiplication with  $1/k_l$  results in a compatible downmix channel, as originally output by the compatibility matrix 5 of Fig. 3A of **HERE**. However, and importantly, the result of the weighting of  $L_c$  by its multiplication with  $1/k_l$ , as shown in Fig. 3C of **HERE**, does not approximate an original channel, as clearly required by Applicants' claims (i.e., "when weighted using the channel side information, results in an approximation of the selected original channel")

Further, in the inverse compatibility matrix block 9 in Fig. 3C of **HERE**, the downmix channels, as available at the output by the compatibility matrix block 5 of Fig. 3A of **HERE**, are indeed weighted by a factor  $c$  (see, for example, equation 3 of col. 5 of **HERE**). However, as discussed in Applicants' reply to the previous Office Action, **this value  $c$  is a weighting coefficient of the compatibility matrix, which, in **HERE**, is not transmitted from an encoder to the decoder, as required by Applicants' claims. Rather, the values of the compatibility matrix 5 of **HERE** and the inverse compatibility matrix 9 of **HERE** are not taught or suggested, in **HERE**, as being transmitted from an encoder to a decoder.**

Instead, col. 5 of **HERE**, lines 32 - 33, state:



Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

In the above equation, a and b as well as c stand for coefficients of the inverse compatibility matrix.  
[emphasis added by Applicants]

Additionally, contrary to the requirements of Applicants' claimed invention, **HERRE** does not teach or suggest that anything, apart from  $k_l$ ,  $k_r$  and the channels  $Y$ ,  $L_c$ , and  $R_c$  (after rating by  $k_l$  and  $k_r$  and subsequent quantization), are transmitted from the encoder to the decoder of **HERRE**. However, in **HERRE**, the **weighting coefficient of the inverse compatibility matrix 9** of **HERRE**, (i.e., a, b or c of equation (3) of **HERRE**) are not transmitted.

To summarize, in the third embodiment of **HERRE** (i.e., Figs. 3A - 3C of **HERRE**), on the encoder-side, the output  $k$  of the compatibility matrix 5 is multiplied by  $k_l$ ; while, on the decoder-side of **HERRE**, the output of the dequantizer is multiplied by  $1/k_l$ , to neutralize the multiplication performed in the encoder. Thus, the influence of this correction factor  $k_l$  - as well as the correction factor  $k_r$  - is **completely neutralized before** the introduction of the compatible downmix channels into the inverse compatibility matrix 9 of **HERRE**. Resultantly, any weighting performed using the transmitted correction factors  $k_l$  and  $k_r$  of **HERRE** never results in an approximation of a selected original channel, as required by Applicants' claims. Rather, analogizing what occurs in **HERRE**

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

to the language of Applicants' claim 1, arguendo, the weighting using  $1/k_l$  or  $1/k_r$  performed in the decoder of Fig. 3C of **HERRE** only results in a reconstruction of the downmix channel, as output by the compatibility matrix 5 of the encoder of Fig. 3A of **HERRE**, but does not result in an approximation of the original channel, as required by Applicants' claims.

Further, page 3 of the Office Action alleges, with regard to  $k_l$  and  $k_r$  of **HERRE**, that "[t]hese constants are multiplied to the downmix channels to obtain the surround channels". Applicants' note that the above statement of the Office Action is, technically, not correct. Rather, on the encoder-side, the constant  $k_l$  and the constant  $k_r$  are, indeed, multiplied with the corresponding channels output by the compatibility matrix block 6 of **HERRE**. However, the encoder of Fig. 3A of **HERRE** does not calculate any surround channels. Further, in the decoder of Fig. 3C of **HERRE** no values are multiplied by  $k_l$  or  $k_r$ . Rather, in the decoder of Fig. 3C of **HERRE**, multiplications are performed using the inverse values of  $k_l$  and  $k_r$  (see, for example, Fig. 3C of **HERRE**). However, these multiplications in the decoder of **HERRE** also do not help to obtain a surround channel. Instead, these multiplications only neutralize the corresponding multiplications in the encoder.

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

As stated previously, a **weighting of a downmix channel used for calculating a surround channel** is found in equation (3) of **HERRE**, wherein a multiplication by  $1/c$  takes place. However, as additionally stated above, the coefficient "c" cannot be considered as the "channel-side information" of Applicants' claims, as it is not transmitted.

Applicants' further note that, in the sentence bridging pages 3 and 4 of the Office Action, it is alleged that the "use of **intensity coding** creates a scaled version which is equivalent to a weighted signal". However, as stated above, the **intensity coding** disclosed in the **HERRE** reference does not relate to the downmix channels, but rather, only relates to **the single intensity stereo mono channel Y**. Applicants believe that this portion of the Office Action contradicts the earlier portion, on page 3, which analogized the first and second downmix channels in Applicants' claims to  $L_c$  and  $R_c$  of Fig. 3A of **HERRE**.

Further, it is unclear from the Office Action, what "scaled version" is created using the intensity coding, alleged in the bridging sentence of pages 3 and 4 of the Office Action. Applicants respectfully request the Examiner to identify the alleged "scaled version" created using the intensity coding

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

which is alleged, in the Office Action, to be equivalent to a weighted signal. For example, when pages 3 - 4 of the Office Action allege that the "scaled version" is equivalent to a weighted signal, is it being alleged that the joint stereo encoding and joint stereo decoding results in an approximation of an original channel? If so, Applicants additionally request clarification on how this would relate to Applicants' claimed invention, since, Applicants' claims require, among other limitations, a weighting being performed using one of two down mix channels, rather than a single intensity stereo mono channel. Further, the single intensity stereo information of **HERRE** is not used to create the downmix channels  $L_c$  and  $R_c$ , as this would not make any sense, since these two downmix channels are **explicitly transmitted** in **HERRE**, and need not be generated by joint stereo decoding. Instead, as can be seen from the Fig. 3C of **HERRE**, the output of the Joint Stereo Decoder 8 of Fig. 3C of **HERRE** does not result in any downmix channels but, rather, results in an approximation of the original channels  $L'$ ,  $R'$ ,  $C'$ .

For the foregoing reasons, among others, Applicants' claims are believed to be patentable over the **HERRE** reference. The **STOLL**, **MILLER**, **THIELE**, **BAUMGARTE**, **HERRE2** and **BRANDENBURG** references, cited in the Office Action with **HERRE**, and each other, against certain of Applicants' **dependent** claims, do not

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

cure the above-discussed deficiencies of the **HERRE** reference.  
As such, Applicants' claims are believed to be patentable over  
**HERRE, STOLL, MILLER, THIELE, BAUMGARTE, HERRE2** and  
**BRANDENBURG**, taken alone, or in any combination.

It is accordingly believed that none of the references,  
whether taken alone or in any combination, teach or suggest  
the features of claims 1, 21, 22 and 27 - 29. Claims 1, 21,  
22 and 27 - 29 are, therefore, believed to be patentable over  
the art. The dependent claims are believed to be patentable  
as well because they all are ultimately dependent on claims 1  
or 22.

Finally, Applicants appreciatively acknowledge the Examiner's  
statement that claims 6, 7 and 26 "would be allowable if  
rewritten in independent form including all of the limitations  
of the base claim and any intervening claims." In light of  
the above, Applicants respectfully believe that rewriting of  
claims 6, 7 and 26 is unnecessary at this time.

In view of the foregoing, reconsideration and allowance of  
claims 1 - 29 are solicited.

In the event the Examiner should still find any of the claims  
to be unpatentable, counsel would appreciate receiving a

Applic. No. 10/679,085  
Response Dated December 24, 2007  
Responsive to Office Action of August 23, 2007

telephone call so that, if possible, patentable language can be worked out.

Additionally, please consider the present as a petition for a one (1) month extension of time, and please provide a one (1) month extension of time, to and including, December 26, 2007, to respond to the present Office Action.

The extension fee for response within a period of one (1) month pursuant to Section 1.136(a) in the amount of \$120.00 in accordance with Section 1.17 is enclosed herewith.

Please provide any additional extensions of time that may be necessary and charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,



For Applicants

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